Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

PQxxxY3H3Z Series/PQxxxY053Z Series

Surface Mount, Large Output Current Type Low Power-Loss Voltage Regulators

■ Features

- Low power-loss (Dropout voltage: MAX. 0.5V)
- Compact surface mount type package (Size:10.6×13.7×3.5mm)
- High output current type
- Low voltage operation (Minimum supply voltage: 2.35V)
- High-precision output type (Output voltage precision: ± 1%)
- Overcurrent, overheat protection functions

■ Applications

- PC motherboad, PC peripherals
- Power supplies for various electronic equipment such as AV, OA

■ Model Line-up

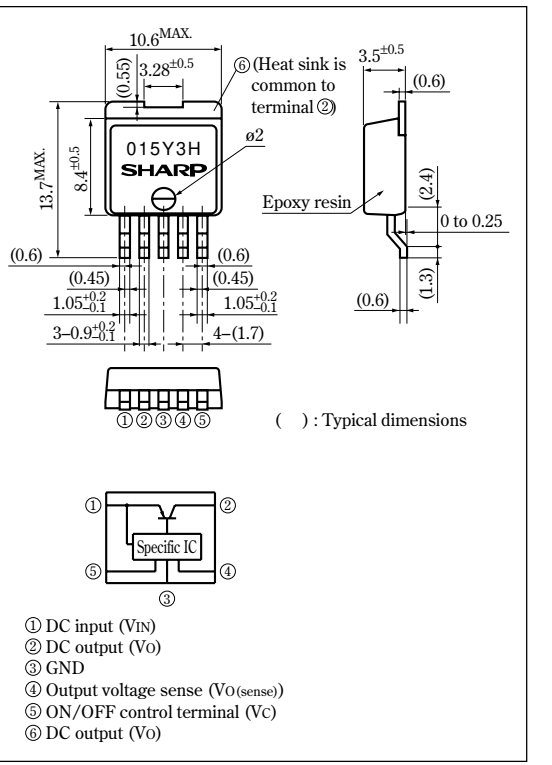
Output current (I_O)	Package type	Output voltage (V_O)		
		1.5V	2.5V	3.3V
3.5A	Taping	PQ015Y3H3ZP	PQ025Y3H3ZP	PQ033Y3H3ZP
	Sleeve	PQ015Y3H3ZZ	PQ025Y3H3ZZ	PQ033Y3H3ZZ
5A	Taping	PQ015Y053ZP	PQ025Y053ZP	PQ033Y053ZP
	Sleeve	PQ015Y053ZZ	PQ025Y053ZZ	PQ033Y053ZZ

■ Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input voltage		V_{IN}	7	V
Dropout voltage		V_{I-O}	4	V
※1 ON/OFF control terminal voltage		V_C	7	V
Output current	PQxxxY3H3Z Series	I_O	3.5	A
	PQxxxY053Z Series		5	
※2 Power dissipation		P_D	35	W
※3 Junction temperature		T_j	150	°C
Operating temperature		T_{opr}	−20 to +80	°C
Storage temperature		T_{stg}	−40 to +150	°C
Soldering temperature		T_{sol}	260 (10s)	°C

※1 All are open except GND and applicable terminals.
※2 P_D:With infinite heat sink
※3 Overheat protection may operate at Tj=125°C to 150°C.

■ Outline Dimensions (Unit : mm)



• Please refer to the chapter " Handling Precautions ".

■ Electrical Characteristics (PQ015Y3H3Z/PQ015Y053Z)

(Unless otherwise specified, condition shall be V_{IN}=5V, I_O=1.75A(**PQ015Y3H3Z**), I_O=2.5A(**PQ015Y053Z**), connects $V_{O(sense)}$ terminal to V_O terminal, Ta=25˚C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage		V_{IN}	–	2.35	–	7	V
※4 Output voltage		V_O	Connects $V_{O(sense)}$ terminal to V_O terminal	1.485	1.5	1.515	V
Load regulation	**PQ015Y3H3Z**	R_{egL}	I_O=5mA to 3.5A	–	0.1	0.5	%
	PQ015Y053Z		I_O=5mA to 5A				
Line regulation		R_{egI}	V_{IN}=2.5 to 5.5V, I_O=5mA	–	0.05	0.1	%
Temperature coefficient of output voltage		T_CV_O	T_j=0 to 125˚C, I_O=5mA	–	±1	–	%
Ripple rejection		RR	Refer to Fig.2	60	70	–	dB
※5 ON-state voltage for control		$V_{C\ (ON)}$	–	2.0	–	–	V
ON-state current for control		$I_{C\ (ON)}$	V_C=2.7V	–	–	20	µA
OFF-state voltage for control		$V_{C\ (OFF)}$	–	–	–	0.8	V
OFF-state current for control		$I_{C\ (OFF)}$	V_C=0.4V	–	–	–0.4	mA
Quiescent current		I_q	I_O=0A	–	5	10	mA

■ Electrical Characteristics (PQ025Y3H3Z/PQ025Y053Z)

(Unless otherwise specified, condition shall be V_{IN}=5V, I_O=1.75A(**PQ025Y3H3Z**), I_O=2.5A(**PQ025Y053Z**), connects $V_{O(sense)}$ terminal to V_O terminal, Ta=25˚C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※4 Output voltage		V_O	Connects $V_{O(sense)}$ terminal to V_O terminal	2.475	2.5	2.525	V
Load regulation	**PQ025Y3H3Z**	R_{egL}	I_O=5mA to 3.5A	–	0.1	0.5	%
	PQ025Y053Z		I_O=5mA to 5A				
Line regulation		R_{egI}	V_{IN}=3 to 6.5V, I_O=5mA	–	0.05	0.1	%
Temperature coefficient of output voltage		T_CV_O	T_j=0 to 125˚C, I_O=5mA	–	±1	–	%
Ripple rejection		RR	Refer to Fig.2	60	70	–	dB
Dropout voltage	**PQ025Y3H3Z**	V_{I-O}	※6 I_O=3.5A	–	–	0.5	V
	PQ025Y053Z		※6 I_O=5A				
※5 ON-state voltage for control		$V_{C\ (ON)}$	–	2.0	–	–	V
ON-state current for control		$I_{C\ (ON)}$	V_C=2.7V	–	–	20	µA
OFF-state voltage for control		$V_{C\ (OFF)}$	–	–	–	0.8	V
OFF-state current for control		$I_{C\ (OFF)}$	V_C=0.4V	–	–	–0.4	mA
Quiescent current		I_q	I_O=0A	–	5	10	mA

■ Electrical Characteristics (PQ033Y3H3Z/PQ033Y053Z)

(Unless otherwise specified, condition shall be V_{IN}=V_O(TYP)+1, I_O=1.75A(**PQ033Y3H3Z**), I_O=2.5A(**PQ033Y053Z**), connects $V_{O(sense)}$ terminal to V_O terminal, Ta=25˚C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※4 Output voltage		V_O	Connects $V_{O(sense)}$ terminal to V_O terminal	3.267	3.3	3.333	V
Load regulation	**PQ033Y3H3Z**	R_{egL}	I_O=5mA to 3.5A	–	0.1	0.5	%
	PQ033Y053Z		I_O=5mA to 5A				
Line regulation		R_{egI}	V_{IN}=4 to 7V, I_O=5mA	–	0.05	0.1	%
Temperature coefficient of Output voltage		T_CV_O	T_j=0 to 125˚C, I_O=5mA	–	±1	–	%
Ripple Rejection		RR	Refer to Fig2	60	70	–	dB
Dropout voltage	**PQ033Y3H3Z**	V_{I-O}	※6 I_O=3.5A	–	–	0.5	V
	PQ033Y053Z		※6 I_O=5A				
※5 ON-state voltage for control		$V_{C\ (ON)}$	–	2.0	–	–	V
ON-state current for control		$I_{C\ (ON)}$	V_C=2.7V	–	–	20	µA
OFF-state voltage for control		$V_{C\ (OFF)}$	–	–	–	0.8	V
OFF-state current for control		$I_{C\ (OFF)}$	V_C=0.4V	–	–	–0.4	mA
Quiescent current		I_q	I_O=0A	–	5	10	mA

※4 Connects $V_{O(sense)}$ terminal ④ to V_O terminal ②
※5 In case of opening control terminal ⑤, output voltage turns ON.
※6 Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

Fig.1 Test Circuit

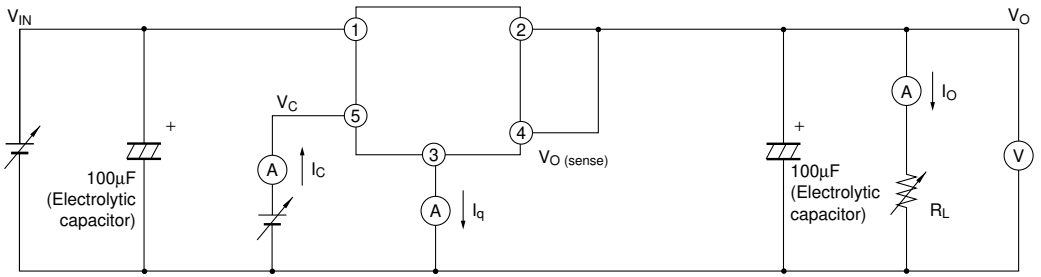
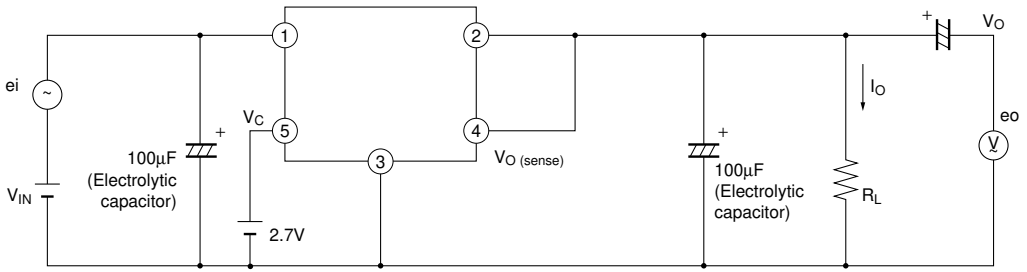
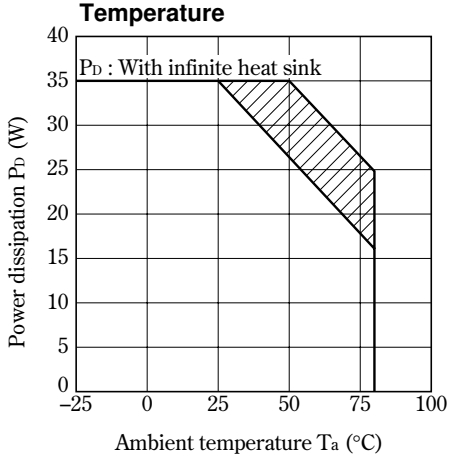


Fig.2 Test Circuit for Ripple Rejection



f=120Hz(sine wave)
ei(rms)=0.5V
V_{IN}=3.3V(**PQ015Y3H3ZZ/P**)
=3.3V(**PQ025Y3H3ZZ/P**)
=5V(**PQ033Y3H3ZZ/P**)
I_O=0.5A
RR=20log(ei(rms)/eo(rms))

Fig.3 Power Dissipation vs. Ambient Temperature



Note) Oblique line portion:Overheat protection may operate in this area.

Fig.4 Overcurrent Protection Characteristics (PQ015Y3H3Z/PQ025Y3H3Z/PQ033Y3H3Z)

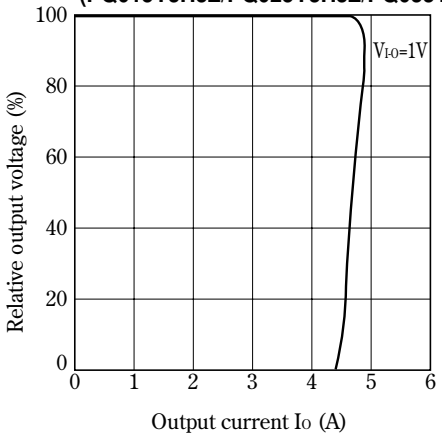


Fig.5 Overcurrent Protection Characteristics (PQ015Y053Z/PQ025Y053Z/PQ033Y053Z)

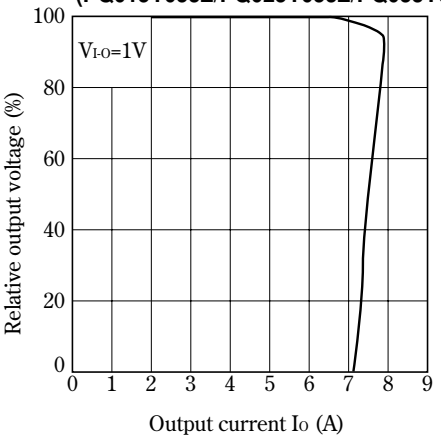


Fig.6 Output Voltage Fluctuation vs. Ambient Temperature

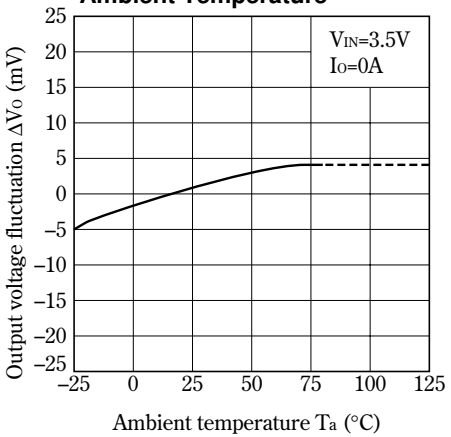


Fig.7 Output Voltage vs. Input Voltage (PQ015Y3H3Z)

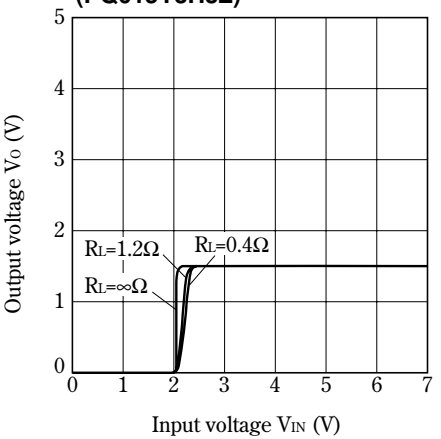


Fig.8 Output Voltage vs. Input Voltage (PQ015Y053Z)

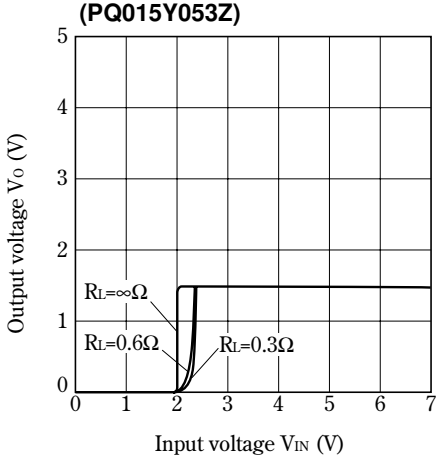


Fig.9 Output Voltage vs. Input Voltage (PQ025Y3H3Z)

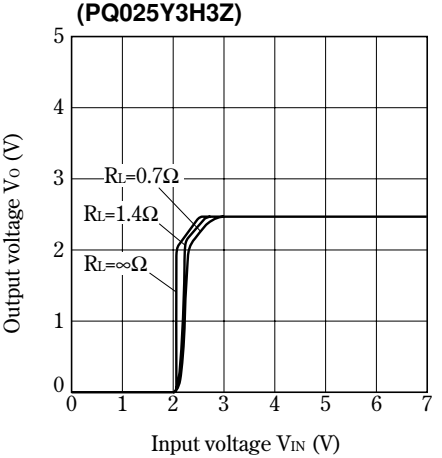


Fig.10 Output Voltage vs. Input Voltage (PQ025Y053Z)

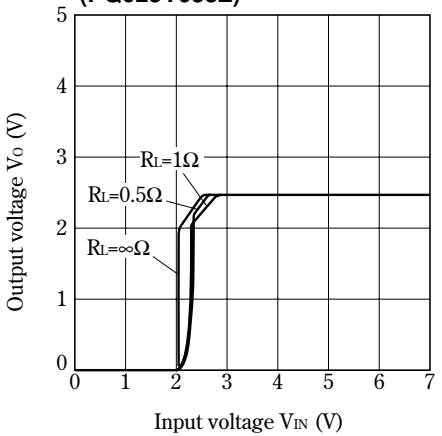


Fig.11 Output Voltage vs. Input Voltage (PQ033Y3H3Z)

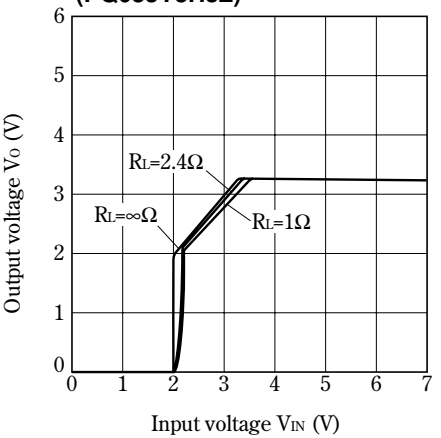


Fig.12 Circuit Operating Current vs. Input Voltage (PQ015Y3H3Z)

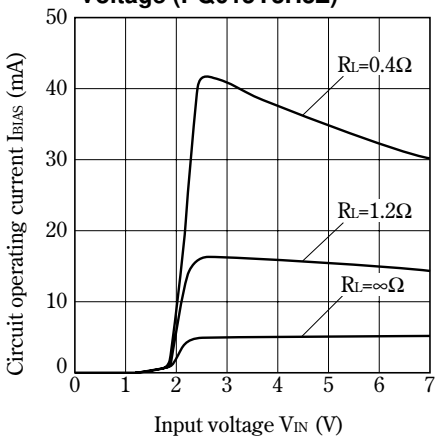


Fig.13 Circuit Operating Current vs. Input Voltage (PQ015Y053Z)

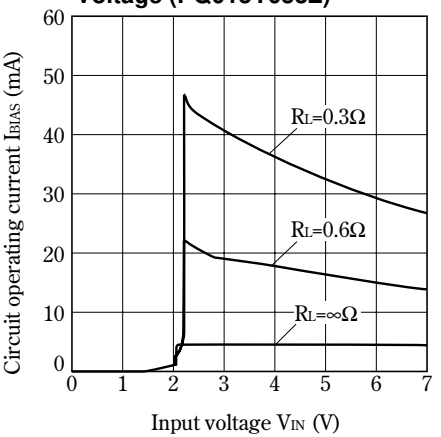


Fig.14 Circuit Operating Current vs. Input Voltage (PQ025Y3H3Z)

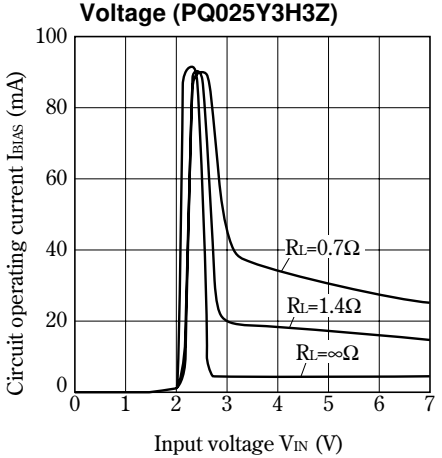


Fig.15 Circuit Operating Current vs. Input Voltage (PQ025Y053Z)

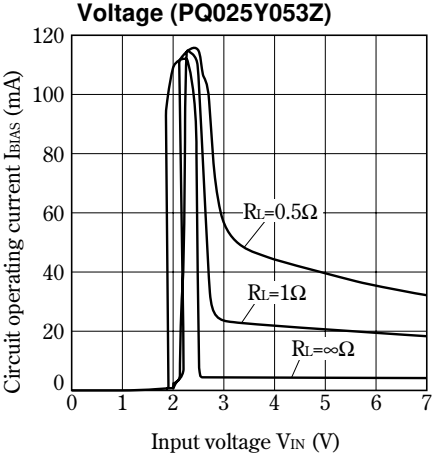


Fig.16 Circuit Operating Current vs. Input Voltage (PQ033Y3H3Z)

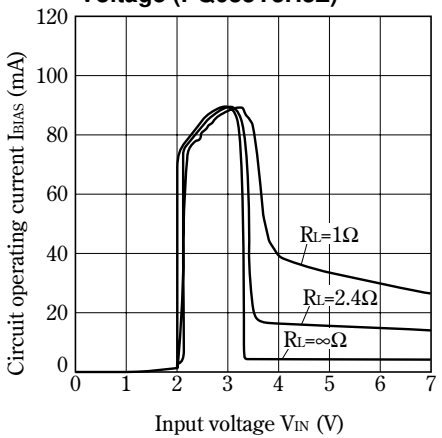


Fig.17 Ripple Rejection vs. Input Ripple Frequency (PQ025Y3H3Z)

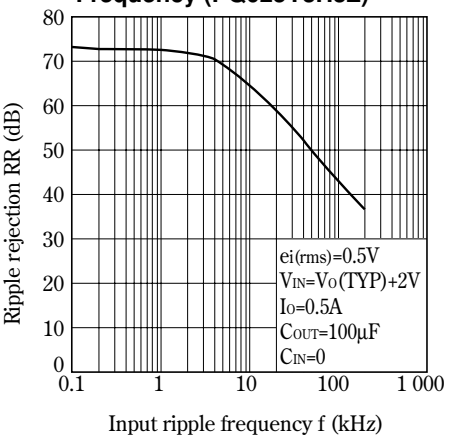
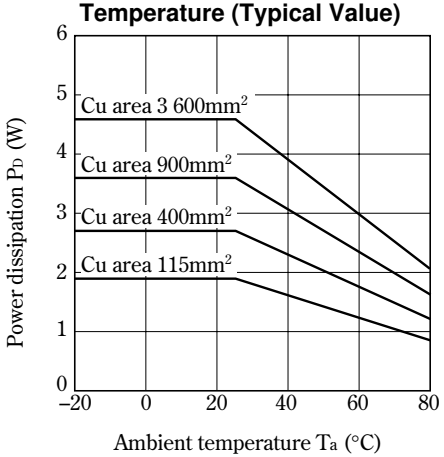


Fig.18 Power Dissipation vs. Ambient Temperature (Typical Value)



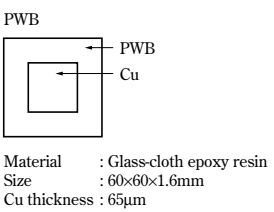
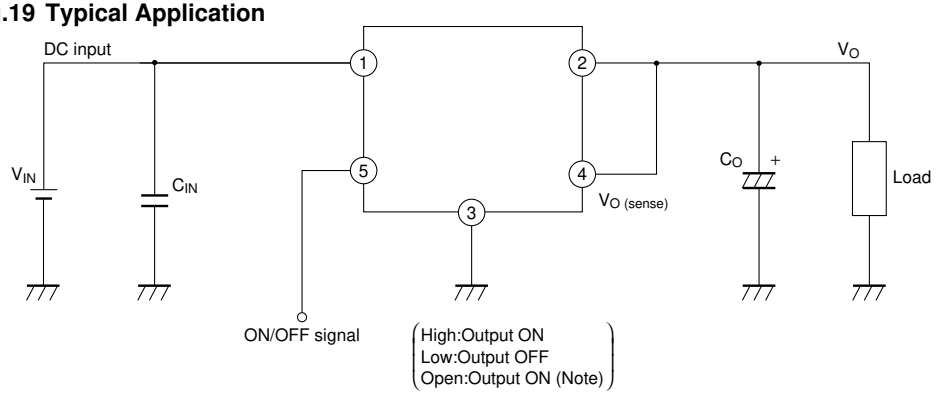


Fig.19 Typical Application



❋ Please make sure to use this device, pulling up to the power supply with less than 7V at the resistor less than 50kΩ in switching ON/OFF with open collector output or in not using ON/OFF function (in keeping "ON"), because input impedance is high in ON/OFF terminals.

NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

  (i) The devices in this publication are designed for use in general electronic equipment designs such as:
  --- Personal computers
  --- Office automation equipment
  --- Telecommunication equipment [terminal]
  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

  (ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
  --- Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
  --- Traffic signals
  --- Gas leakage sensor breakers
  --- Alarm equipment
  --- Various safety devices, etc.

  (iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
  --- Space applications
  --- Telecommunication equipment [trunk lines]
  --- Nuclear power control equipment
  --- Medical and other life support equipment (e.g., scuba).

- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Control Law of Japan, it is necessary to obtain approval to export such SHARP devices.
-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.